

Missouri's Muskrats

A Guide to Damage Prevention and Control



Serving nature and you®

Missouri Department of Conservation

Copyright © 1998, Revised 2012, 2017, 2019 by the Conservation Commission of the State of Missouri

Equal opportunity to participate in and benefit from programs of the Missouri Department of Conservation is available to all individuals without regard to their race, color, religion, national origin, sex, ancestry, age, sexual orientation, veteran status, or disability. Questions should be directed to the Department of Conservation, PO Box 180, Jefferson City, MO 65102, 573-751-4115 (voice) or 800-735-2966 (TTY), or to Chief, Public Civil Rights, Office of Civil Rights, U.S. Department of the Interior, 1849 C Street, NW, Washington, D.C. 20240.

CONTENTS

Introduction	2
Characteristics.....	2
Habitat.....	3
Feeding habits.....	3
Reproduction.....	3
Legal status.....	3
Damage Prevention	4
Protecting ponds	4
<i>Dam dimensions</i>	4
<i>Rip-rapping</i>	4
<i>Protective wire</i>	4
<i>Water fluctuations</i>	4
Protecting docks	4
Control Methods	5
Trapping.....	5
<i>At dens or burrows</i>	5
<i>Under ice at bank dens</i>	7
<i>At docks</i>	8
Live trapping.....	9
Shooting.....	9
Methods that don't work.....	9

The *Wildlife Code of Missouri* classifies the muskrat as a furbearer and game mammal that may be taken during the prescribed trapping season. See current regulations for details. The *Code* also specifies that you may shoot or trap damage-causing muskrats out of season without a permit. Refer to 3 CSR 10-4.130 Owner May Protect Property; Public Safety of the *Code* for details and restrictions.

The muskrat's scientific name is *Ondatra zibethicus*. *Ondatra* is the Iroquois Indian word for muskrat, and *zibethicus* is a Latin word meaning musky odored, which refers to the rodent's unusual smell.

Written by Ron McNeely

Edited by Jim Braithwait, Tom Hutton, Gene Kelly and Joan McKee

Illustrated by David Besenger

INTRODUCTION

The most common complaint of muskrat damage involves burrowing into pond or lagoon dams. While muskrats can cause damage with their burrowing, they generally do not dig far enough to seriously weaken a properly built dam. Beavers and tree roots cause greater damage because they create openings that penetrate deep into the dam.

Most farm ponds that have grassy or weedy vegetation around the banks will have a few muskrats that may live there for years without causing serious damage. Because muskrats seldom use burrows that are above water level, pond owners seldom notice the presence of muskrats until prolonged

dry weather exposes their burrows. By this time, most of the muskrats have died or moved, and trapping efforts are generally fruitless.

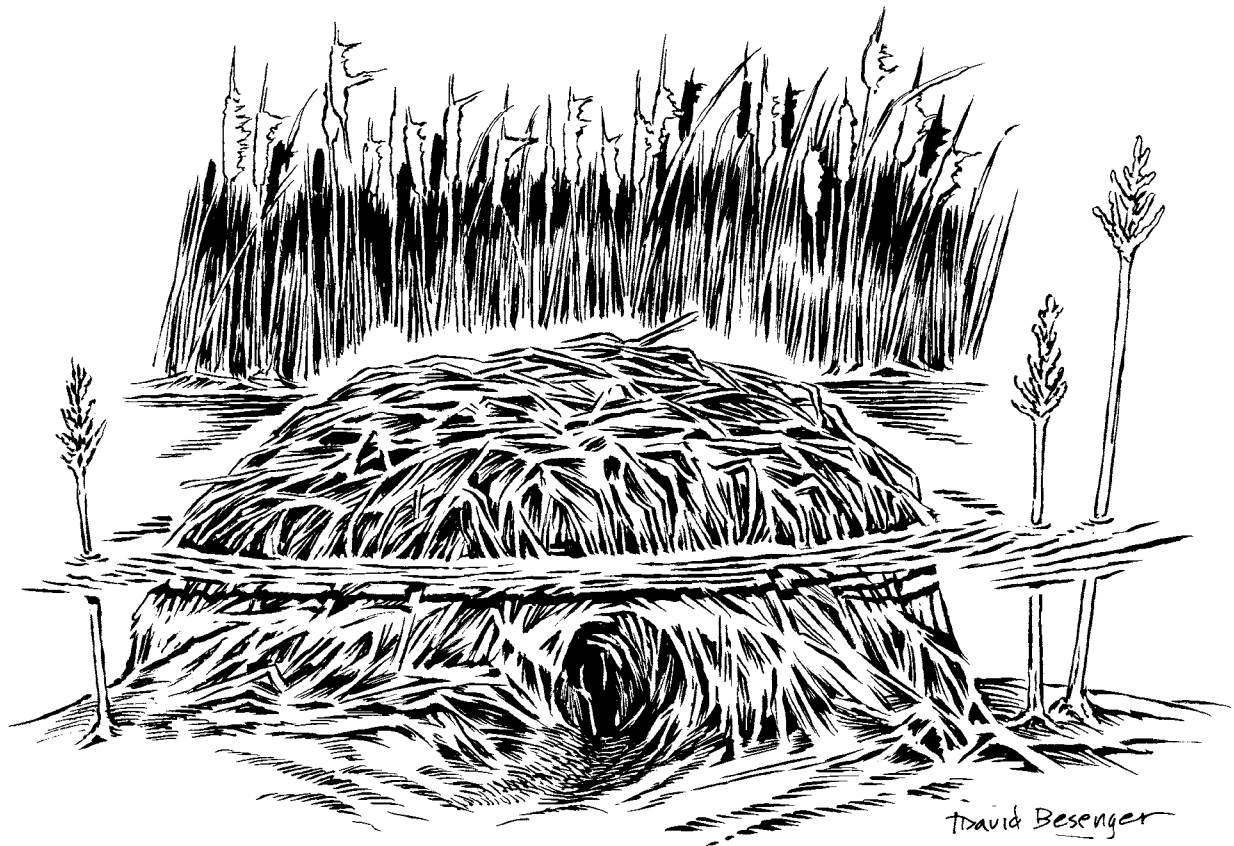
There are situations, however, where muskrats may damage a poorly constructed dam, or chew and burrow into foam flotation blocks on boat docks. This booklet is designed to help readers understand muskrat behavior and offer preventative methods and solutions to muskrat problems.

The Missouri Department of Conservation's wildlife damage biologists can help you decide what methods work best in a particular situation and provide technical advice to prevent problems.

Characteristics

The muskrat is a brown medium-sized furbearing rodent with a thick body and short legs. An adult weighs about 2 1/2 pounds. It has a body length of 11 to 14 inches, not counting its 11-inch long slender tail, which is scaly, practically hairless and flattened vertically.

When the animal is standing on its hind feet, the tail serves as a prop. When it is swimming, the tail appears to be used as a rudder. The muskrat's large, broad, hind feet are partially webbed, which also help it swim. Muskrats are seldom found far from water. They prefer still or slow-moving waters of marshes, ponds, and streams.



When muskrats can't find a steep enough slope to support a bank den, they build a house in the water using cattails, reeds, and other aquatic plants. These houses are different from beaver lodges, which are larger and made up of sticks and mud.

Muskrats are active year-round. While usually nocturnal, they also may be seen during the day. Muskrats have dense, silky, grayish underfur heavily overlaid on the back and sides with glossy, dark-brown guard hairs, which help insulate the skin.

Habitat

In Missouri, muskrats usually make their homes in pond or stream banks. They dig their bank dens, which have an underwater entrance, into steep sloping soils. Tunnels are 5 to 6 inches in diameter and extend into the bank to a point above water level. Located a few feet from the entrance is a dry chamber 10 to 12 inches in diameter.

Muskrats commonly occupy abandoned beaver lodges or bank dens. Sometimes they share the entrance to an occupied beaver bank den and dig their own home next to the beavers' den.

Muskrats may construct houses in the water using available vegetation, such as cattails, reeds and other aquatic plants. Muskrat houses are sometimes mistaken for beaver lodges, but are much smaller and do not contain sticks or mud.

Feeding habits

Muskrats are primarily herbivores, feeding mostly on roots and stems of aquatic plants. If present near water, other foods may include legumes, grasses, grains, garden crops and apples.

Occasionally muskrats feed on freshwater mussels, crayfish, and other small aquatic animals, including dead muskrats. They sometimes eat fish, but the impact on a fish population in a pond is minimal.

Entrances to active bank dens are a few inches to 3 feet below water level. If the water level starts to go down, muskrats will dig new burrows. By the time a drought exposes entrances to bank dens, the muskrats probably have abandoned the pond or died due to stress, predation, or other causes.

Reproduction

Muskrats breed from early spring until fall, commonly producing two or three litters a year. Each litter contains from four to seven young, which are born hairless.

Nest chambers provide protection during the early weeks of life when the young are totally dependent on their parents. Young muskrats grow rapidly and are independent at one month old.

Muskrats are vulnerable to many mortality factors, such as parasites, predators, flooding, and drought. Flooding of dens may drown the young or cause the bank dens to cave in. Drought conditions cause muskrat mortality due to stress, starvation, and vulnerability to predators. Muskrat predators include great horned owls, foxes, coyotes, snapping turtles, largemouth bass, mink and otters.

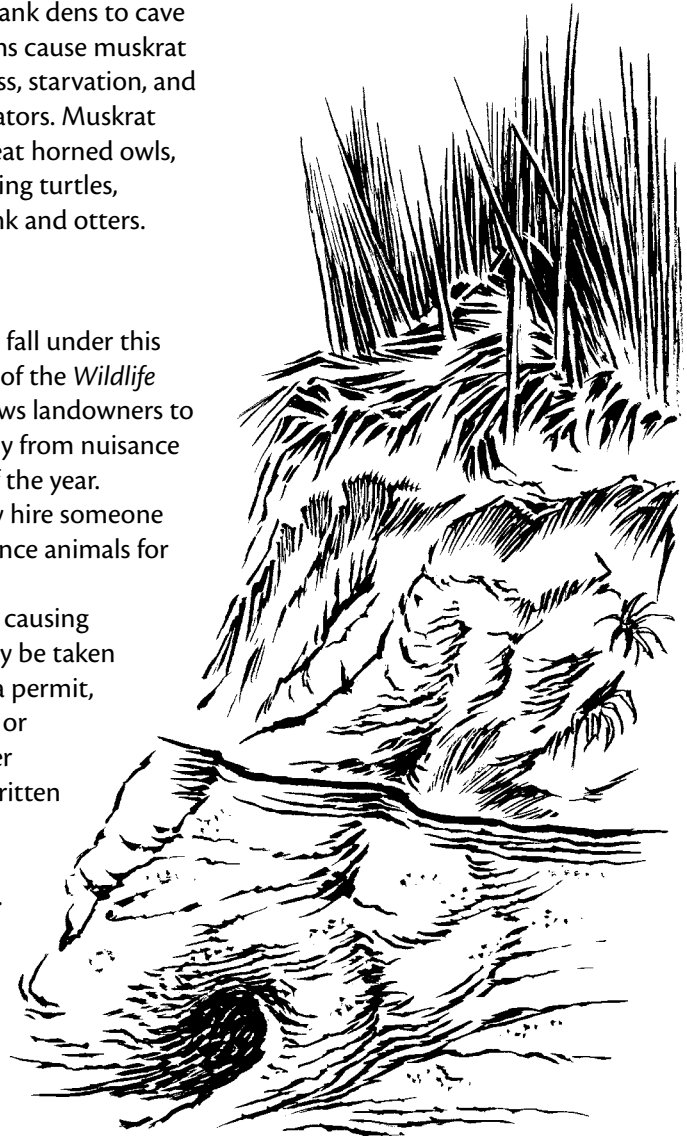
Legal status

While not all animals fall under this provision, Rule 4.130 of the *Wildlife Code of Missouri*, allows landowners to protect their property from nuisance muskrats any time of the year. Property owners may hire someone to trap or hunt nuisance animals for them.

Muskrats that are causing property damage may be taken at any time without a permit, but only by shooting or trapping. To use other methods takes the written authorization of the Conservation Department director.

Nuisance muskrats taken out of season may not be used, transported, sold, or given away. They must be reported to a conservation agent within 24 hours and disposed of in accordance with the agent's instructions.

In Missouri, muskrats are classified as furbearers, and their harvest is regulated. If muskrat problems can be tolerated until trapping season, landowners may sell the pelts.



DAMAGE PREVENTION

Most complaints about muskrats are a result of the animals' burrowing into pond or lagoon banks, or chewing and burrowing into foam flotation blocks under boat docks. Below are some ways to prevent these problems.

Protecting ponds

Muskrat burrows usually extend only a few feet into pond dams or banks, generally not far enough to cause structural damage. Well-built pond dams are too high and broad to be seriously damaged by muskrats.

Dam dimensions

The potential for muskrat damage to ponds can be greatly reduced if the dam is constructed according to the following specifications.

The inside face of the dam should be on a 3-to-1 slope and the back of the dam on a 2-to-1 slope. The top of the dam should be at least 8 feet wide.

The gentle slope of the dam discourages muskrats from burrowing, and the broad top makes it less likely that muskrats will burrow far enough to cause significant problems.

Normal water levels should be at least 4 feet below the top of the dam, and the spillway or overflow pipe should be large enough to allow water to be released quickly during periods of heavy rain.

Rip-rapping

Burrowing can be discouraged by rip-rapping the dam with coarse stones 6 inches or more in diameter. Place them from 1 foot above to 4 feet below the water level.

Rip-rap can be installed during pond construction or added to an already existing pond. Rip-rap also protects the dam from erosion by waves.

Protective wire

One- or 2-inch galvanized wire placed along the water's edge will discourage muskrats from burrowing in a dam.

Cut the wire so it will extend from 1 foot above to at least 4 feet below the water level. Place the wire flat against the dam and fasten it down with stakes.

Water fluctuations

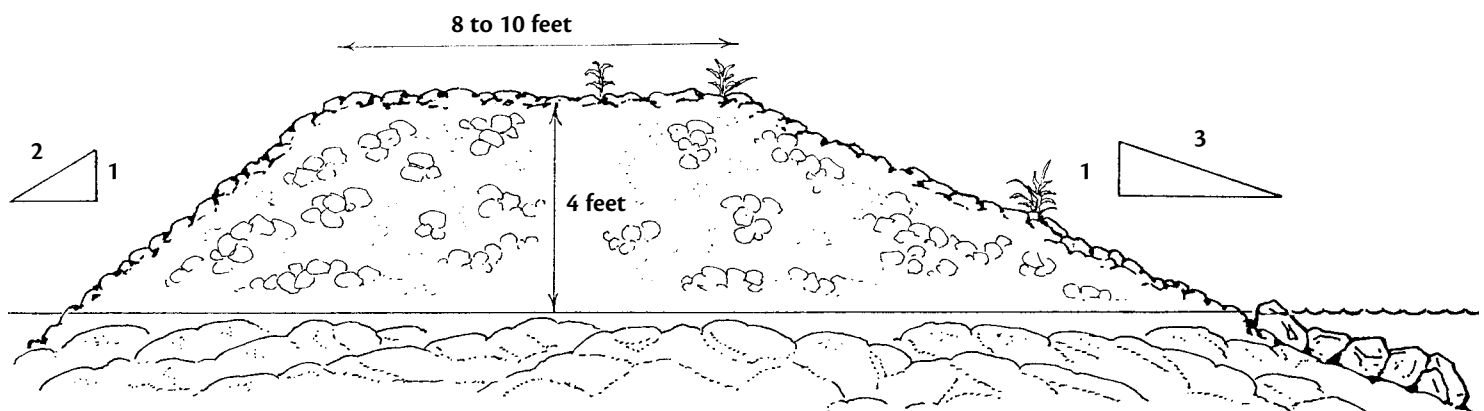
Lowering the water level of a pond or lagoon to several feet below normal helps control muskrats by making them more vulnerable to predators. Draw-downs leave bank den entrances above water level and eliminate the steep bank muskrats prefer for burrowing. Draw-downs are especially effective during winter.

Protecting docks

Galvanized welded wire can be used to protect foam flotation blocks under docks. One- or 2-inch wire can be installed either before or after dock construction.

First, measure the flotation blocks and cut the wire to size on the dock. Then fit the wire around the blocks to give complete protection to the foam.

Another option is to replace the foam blocks with flotation logs encased in a hard polyethylene shell that is resistant to damage by muskrats.



Using the correct dimensions when building a dam will minimize muskrat damage and reduce maintenance. For more information on pond construction, write to "Missouri Pond Handbook," Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102-0180.

CONTROL METHODS

The first step to control muskrats is to find where they live. Their presence can be determined by walking along the water's edge and looking closely for the underwater tunnel where muskrats enter the den.

Entrances are usually a few inches to 3 feet below the water level. Look for muddied water and floating vegetation. Muskrats also may leave pellet-shaped droppings on rocks or logs along the shoreline near the den.

Trapping

The *Wildlife Code of Missouri* classifies the muskrat as a furbearer and game mammal that may be taken during the prescribed trapping season. See current regulations for details. The *Code* also specifies that you may shoot or trap damage-causing muskrats out of season without a permit. Refer to **3 CSR 10-4.130** Owner May Protect Property; Public Safety of the *Code* for details and restrictions.

Trapping is the best way to remove muskrats that are causing damage to dams and docks. The sections below provide help in selecting the right trap for each situation.

At dens or burrows

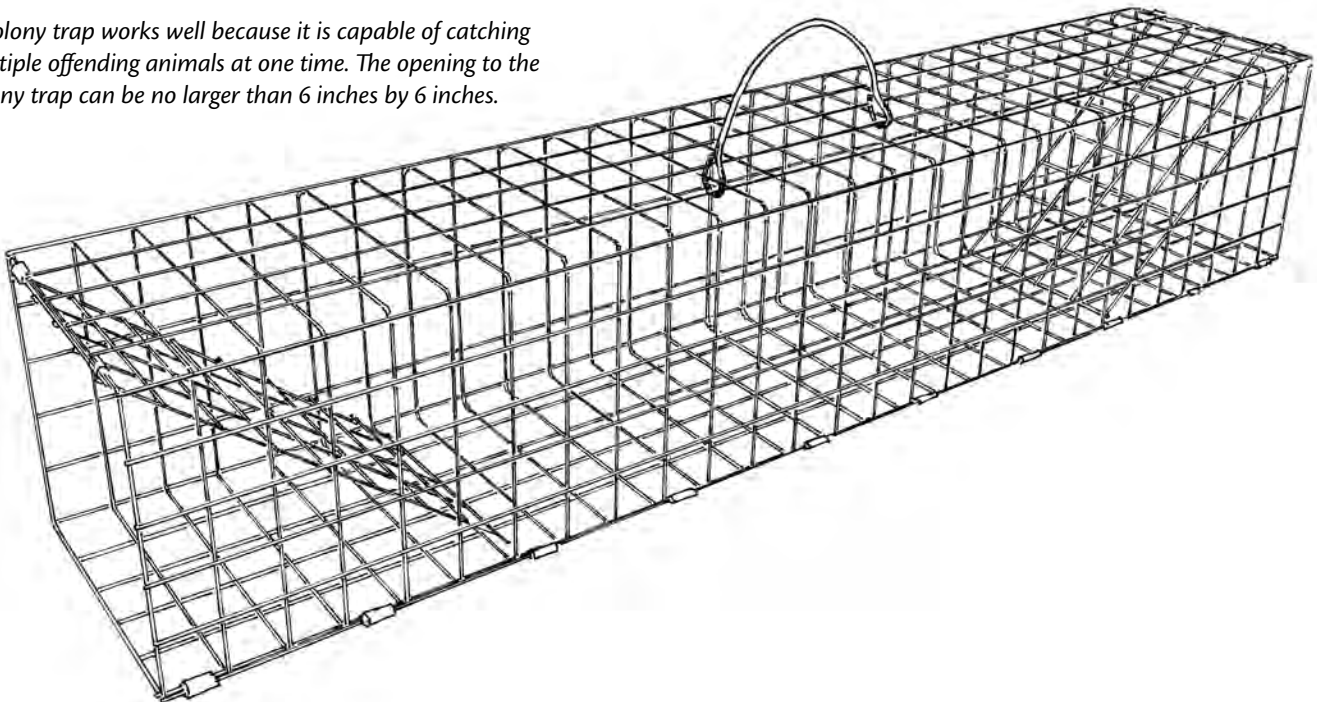
Two commonly used traps are the colony trap and the No. 110 body-grip trap. These two traps are used in the same manner by placing the traps underwater at the opening of the muskrat burrow.

Colony traps are easy to use because you simply place the trap in front of the burrow. The trap has two gravity-operated trap doors which eliminate the need to set a trigger mechanism. The opening of the colony trap can be no larger than 6 inches by 6 inches. A colony trap works well because it is capable of catching multiple offending animals at one time. To be most effective, set traps at underwater entrances to all

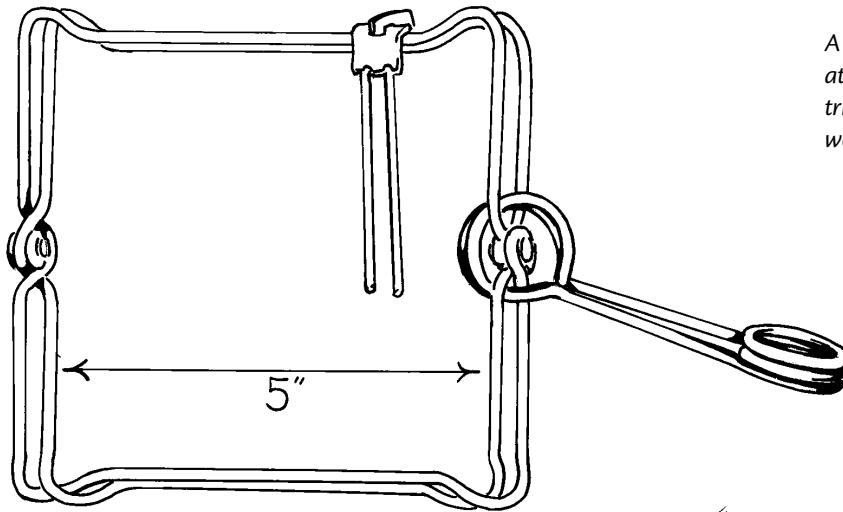
active bank dens. These entrances usually can be seen if the water is clear. If the water is murky, carefully wade along the shoreline and feel for the entrances with your feet. If the run leading out of the den contains silt or has caved in, the den probably has been abandoned.

A No. 110 body-grip trap catches the muskrat across the head or body, killing it quickly. Place a trap in the run close to the entrance so muskrats swimming in or out of the den must pass through the trap. To hold it in place, push a stake about the size of the average broom handle through the eye of the trap's spring. Place the trap's trigger to one side to allow the muskrat to swim well into the trap before it springs shut.

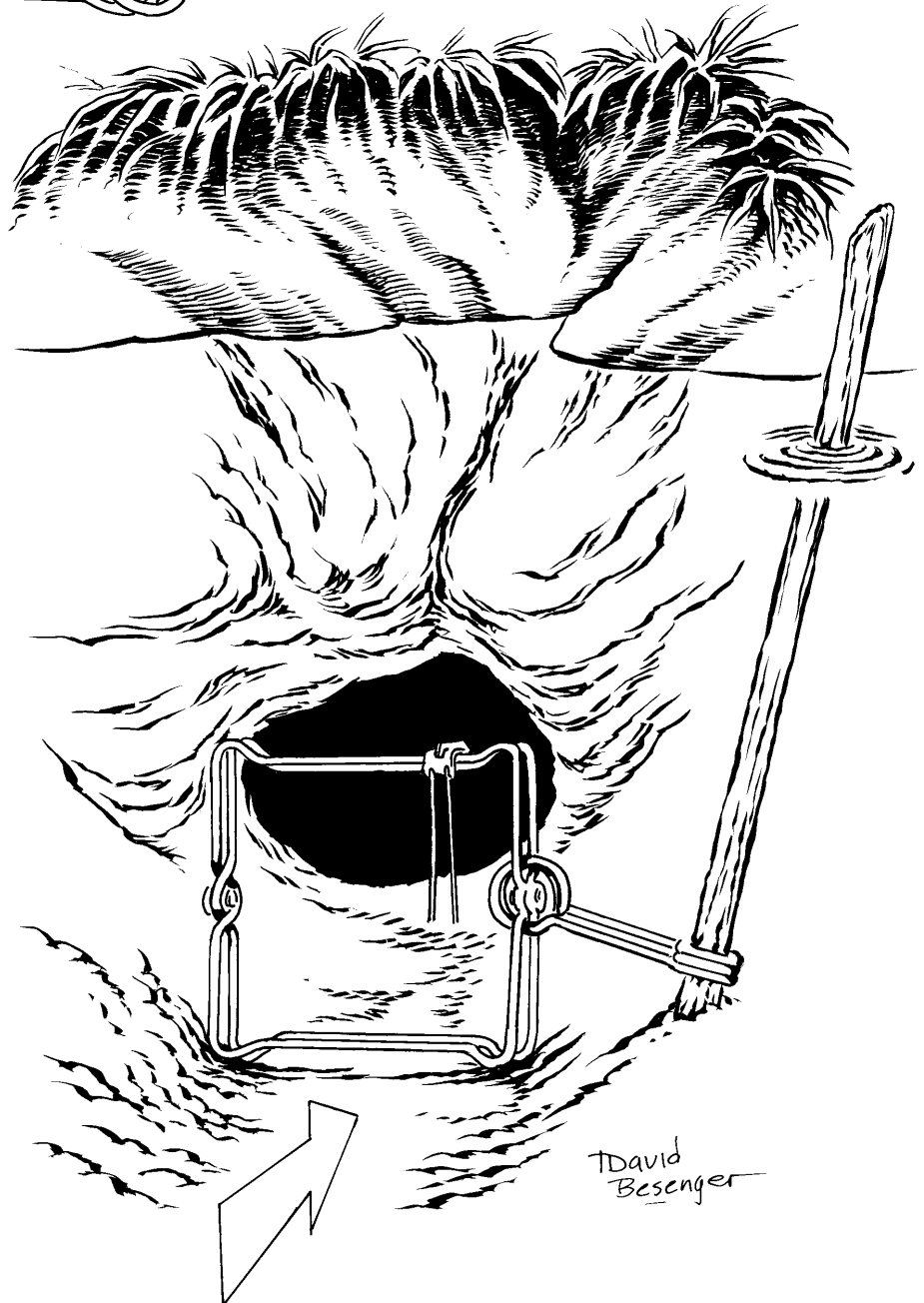
A colony trap works well because it is capable of catching multiple offending animals at one time. The opening to the colony trap can be no larger than 6 inches by 6 inches.



CONTROL METHODS



A No. 110 body-grip trap works best when set at underwater entrances to bank dens. The trigger set offside will allow a muskrat to get well into the trap before it shuts.



To set traps at bank dens, push a stake through the eye of the spring, then gently push the trap into the mud until it stays upright. If the trap is embedded too far into the mud, it may not close completely.

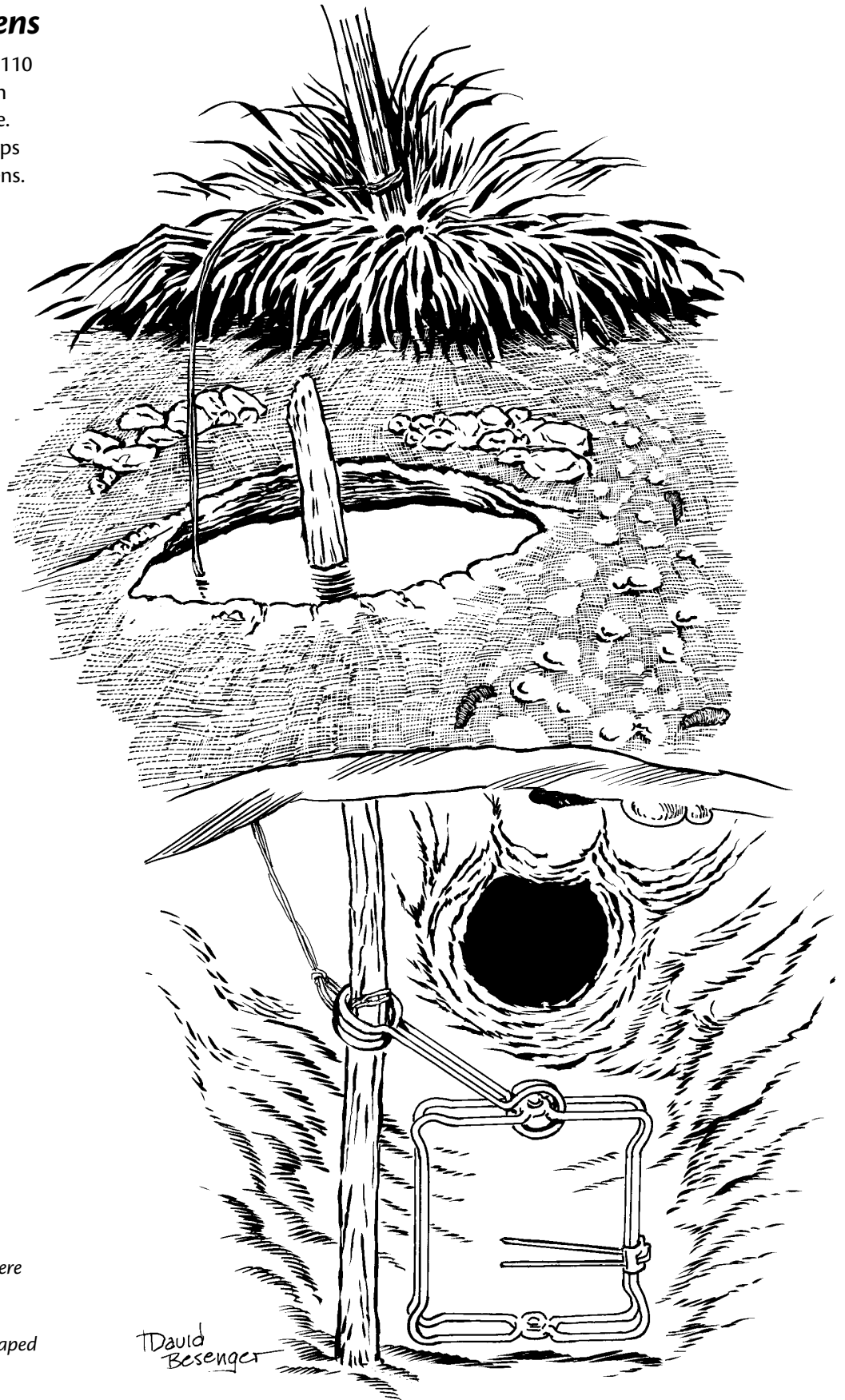
Under ice at bank dens

Muskrats can be caught with No. 110 body-grip traps in the winter, even when the pond is covered with ice.

As during warmer weather, traps should be set at all active bank dens. To find the dens, look for a string of air bubbles and pellet-shaped droppings just under the ice. Also look for muddied water under the ice.

Chop a hole in the ice over the entrance of each den. Then set the trap by attaching it to a stake about the size of a broom handle.

To easily retrieve the trap, wire the stake that is in the water to a shorter stake driven into the shore.



During freezing temperatures when there is no snow on the ice, bank dens can be found by looking for a string of air bubbles, muddied water and pellet-shaped droppings just under the ice.

*T. David
Besenger*

CONTROL METHODS

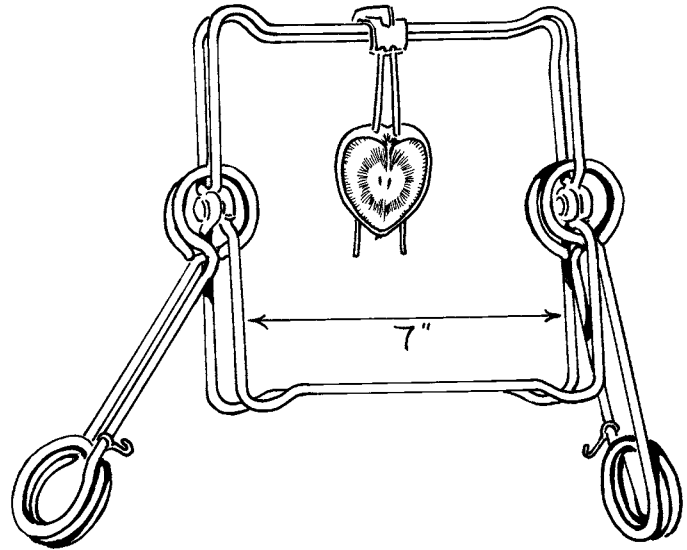
At docks

When muskrats are establishing dens in foam flotation blocks under boat docks, use a baited No. 220 body-grip trap.

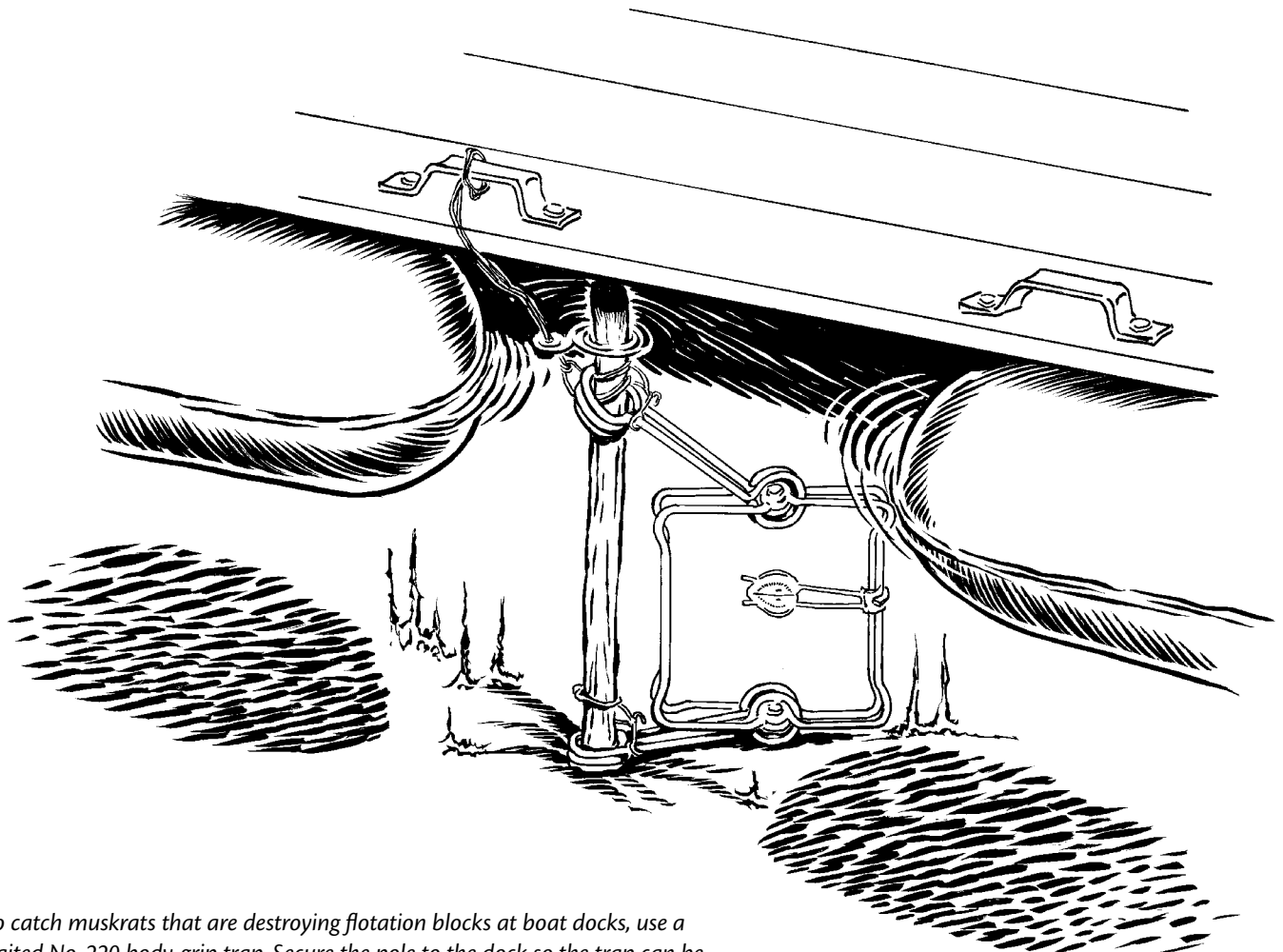
Be extremely careful when setting these larger traps. The two springs give them a stronger grip, and the 7-inch spread makes them large enough to injure children, as well as adults.

Position the trigger in the center of the trap. Bait it with apples, carrots, celery or an ear of corn by pushing the bait into the trigger or tying it with wire or string.

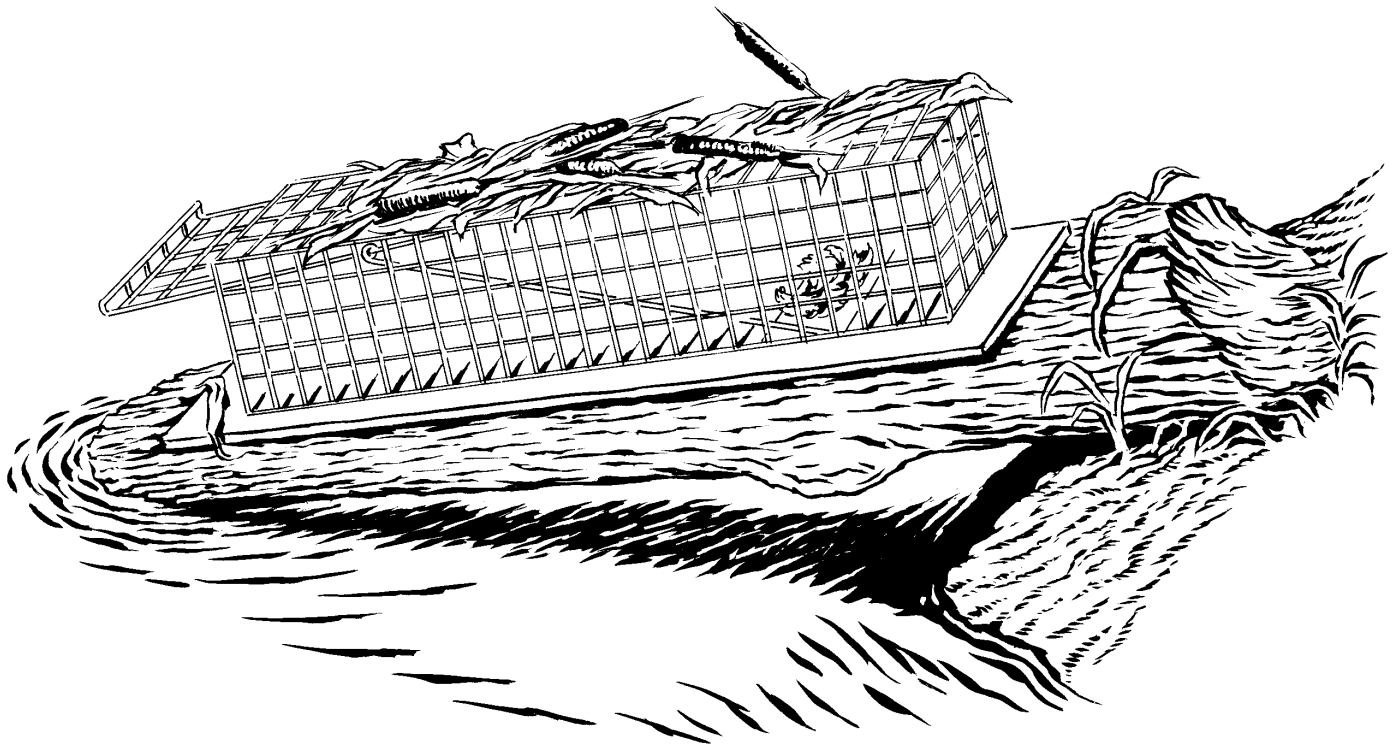
Wire the trap securely underneath the boat dock or to a pole inserted through the springs.



A baited No. 220 body-grip trap works well to catch muskrats at boat docks. The larger trap, which is more dangerous to use than the No. 110 trap, enables the jaws to shut securely around the animal as it tries to work the bait off the trigger.



To catch muskrats that are destroying flotation blocks at boat docks, use a baited No. 220 body-grip trap. Secure the pole to the dock so the trap can be retrieved easily.



A cage trap baited with lettuce or cabbage and fastened to a log can be set to catch muskrats when the use of body-grip traps may endanger people or pets. Cage traps should only be used when the weather is above freezing. After the water in a pond or lake freezes, muskrats remain beneath the ice.

Live trapping

Cage traps are more expensive and less versatile than body-grip traps, but they can be used to catch nuisance muskrats near boat docks where the use of body-grip traps may endanger people or pets.

Place the cage trap on a floating platform and tether it to the bank or boat dock. The trap also can be fastened to a board or log that extends from the bank into the water.

Bait the trap with lettuce or cabbage. Muskrat lure, which can be purchased from trapper supply stores, will help entice muskrats into a cage trap.

Place cattails, tall grass or other grassy vegetation over the trap so it resembles a muskrat house.

Note: Cage traps should not be used to move muskrats to another area. The mortality rate is high among

relocated muskrats. They are more vulnerable to predators and are often attacked by other muskrats because of territorial competition. It is usually better to euthanize muskrats that are caught in cage traps.

Shooting

Shooting is an effective means of removing muskrats, but it must be done safely. Shotguns are preferred over rifles because they require less accuracy and the pellets are less likely to ricochet off the water. Muskrats are most active at dusk and just before sunrise.

Check local ordinances before shooting within city limits. Shooting muskrats is permitted only to control damage as outlined in the *Wildlife Code of Missouri*. See Page 3 for more information on the legal status of muskrats.

Methods that don't work with muskrats

The following methods are sometimes tried to rid an area of nuisance muskrats, but they have not proven effective and may be illegal.

- Scare devices, such as gunfire and fireworks, may help disperse some nuisance wildlife, but their use does not discourage muskrats.
- Repellents should not be used to rid an area of muskrats since none are registered for this use and are not known to be effective, environmentally safe or practical.
- Toxicants, whose use is illegal to control muskrats in Missouri, are environmentally unsafe and detrimental to other wildlife and fish.
- Fumigants are not registered for use in controlling muskrats in Missouri.



Serving nature and you®

mdc.mo.gov